Working out what works: The role of tacit knowledge where urban greenspace research, policy and practice intersect

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Working out What Works: The Role of Tacit Knowledge Where Urban Greenspace Research, Policy and Practice Intersect

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Abstract: Policymakers and practitioners working in urban greenspace management want to know what kind of interventions are effective in promoting mental wellbeing. In practice, however, they rely on multiple forms of knowledge, often in unwritten form. This paper considers how such knowledge is interpreted and used by a range of stakeholders to identify greenspace interventions to support residents' health and wellbeing in one UK city. It examines the interface between academic research, policy and practice, drawing on the findings of a three-year study in Sheffield, UK. The Improving Wellbeing through the Urban Nature project investigated the links between 'urban nature' and mental health. One strand of the research sought to influence policy and practice, and this article presents findings and reflects on some of the processes of this exercise. It highlights the role of tacit knowledge in practice and its influence on practitioners' choice of greenspace interventions and the challenges in drawing on such knowledge to influence policy. The findings affirm practice-based knowledge as socially situated, interpretively fashioned and politically weighted. This paper concludes by demonstrating the importance of considering the local context when devising policy prescriptions for greenspace provision and management.

Keywords: urban greenspace; parks; governance; tacit knowledge; good practice; wellbeing; greenspace management; Sheffield

1. Introduction

The city of Sheffield in the north of England used to be famous for its steel-making. But this former industrial city also boasts of nearly one thousand publicly accessible green spaces, 4.5 million trees [1], and a national park on its doorstep. Civic leaders have branded Sheffield as The Outdoor City.

Taken in isolation, the statements above suggest that this post-industrial city has undergone a successful transformation and now boasts of an excellent quality of life. For many of Sheffield's residents, this is true. For many others, it tells only a fraction of the story. The city has above-average levels of ill-health: 6.1% of residents rate their health as poor or very poor compared with 5.5% nationally [2]. It is also profoundly unequal: life expectancy is nearly ten years lower for women who live at the eastern end of the 83 bus route than those who live at its western terminus [3].

This article arose from research that sought to understand how the city's lauded greenspace assets could become part of the solution to its persistent problems of mental ill-health and health inequalities. Specifically, the article examines how the process of generating and seeking to apply new evidence highlights the difficulties in understanding 'what works' and implementing appropriate solutions. Thus, it considers how knowledge is interpreted and used by a range of stakeholders to identify and justify their actions in practice to support residents' health and wellbeing.

The next section outlines the context of the research and introduces the research project, Improving Wellbeing through Urban Nature (IWUN), with a brief overview of the links between greenspace and wellbeing. This is followed by a discussion of the relationships between knowledge and practice, focusing in particular on the role and importance of tacit knowledge [4,5] in shaping greenspace policy and practice. We then go on to demonstrate how practitioners' tacit knowledge informed and guided the process of choosing greenspace interventions, after which we reflect on the processes of translation that stabilize or destabilize what is 'known' and where it is known.

1.1. Improving Wellbeing through Urban Nature: The Project and Its Context

IWUN is a multi-disciplinary investigation of the relationship between urban greenspace and the people, places and policies operating within a large English city. Sheffield's green spaces (Figure 1) have attracted previous academic research [6,7] but this detailed case study sought to better understand the complex web of interactions that determine how green spaces are used and what effects they have. The purpose of such case study research was to provide the 'context-dependent knowledge' that lies 'at the very heart of expert activity' [8]. It answered questions about how and why things happen as they do. Sheffield is of particular interest because the relationships between green spaces and urban deprivation are complex, challenging simplistic notions that improved wellbeing is directly related to the proximity of green spaces [9,10].

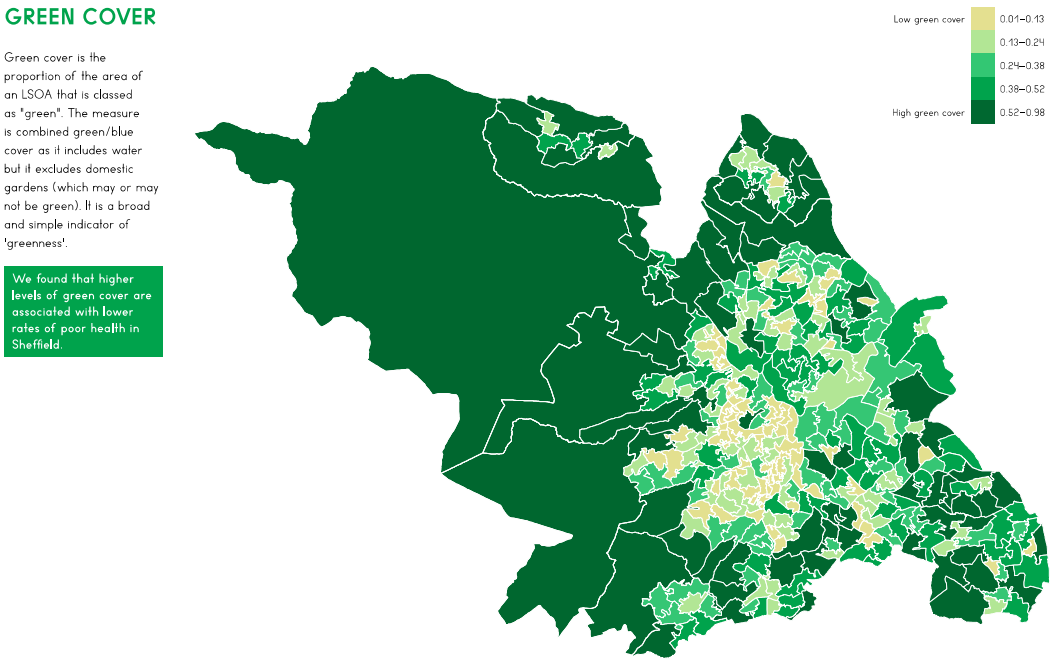

Figure 1. Map of Sheffield showing the proportion of greenspace cover (source: IWUN).

The study reported here supports previous case studies that address the governance of urban greenspace. These include a study of Danish municipalities which highlighted greenspace managers' reliance on 'their own experiences and preferences' [11], a study explaining the emergence of 'hybrid network governance' of greenspace in New York City [12], case studies in Berlin, Amsterdam and Milan highlighting the importance of the 'adaptive capacity' of citizen groups in long-term place-keeping [13], and an examination of different governance models in cities including Kathmandu (Nepal), Edinburgh (Scotland), Emmen (Netherlands) and Gothenburg (Sweden), which highlighted the importance of social norms in decision-making [14]. Our paper takes this work forward by showing not only how the tacit knowledge of greenspace managers and stakeholders is translated into practice, but also how this process interacts with the knowledge produced through academic research to generate mobile assemblages of knowledge that impact upon policy and practice. The processes through which such

knowledge assemblages are constructed are relevant to other urban contexts characterized by pressures on public services, financial constraints and social divisions, both within the UK and internationally.

Research for the IWUN project took place between 2016 and 2019. IWUN is one of a series of research projects funded by four higher education research councils and the UK Government through the £6.5 million Valuing Nature programme (More information about IWUN is available at www.iwun.uk and full details of the research projects in the Valuing Nature programme are at http://valuing-nature.net/research). The stated aims, as set out in the funding application, were to 'study the interaction within one large city between people, their local natural environment and their health and wellbeing'. It sought to

1. Understand, at a detailed level, how the health and wellbeing of people within different neighborhoods relates to the quantity, quality and distribution of natural greenspaces where they live;
2. Investigate the role that culture, upbringing, social values and norms play in this;
3. Explore how people from different ethnic and socio-economic groups interact with greenspaces and how this affects their connectedness to nature, and mental health and wellbeing;
4. Discover how the biodiversity value of the places that people visit affects their mental health and wellbeing;
5. Develop a method of assessing the economic implications of these insights;
6. Develop effective ways to feed this knowledge into the policy, delivery and investment decisions of politicians, planners, designers, developers, land managers, public health commissioners and other professionals, business leaders and relevant voluntary and community organizations.

This article focused on the sixth of these objectives. Other published papers [9,10,15,16] addressed the other aspects of the project and detailed their respective methods and findings.

The IWUN research project started from the premise that the links between the natural environment—urban greenspace in particular—and physical and mental wellbeing have already been well evidenced [17]. A brief overview of the recent literature confirms the links between access to nature and psychological wellbeing and stress relief [18–21]. Benefits can be short-term—immediate improvements in wellbeing as a result of a walk or a run, for example [22,23]. But there are also long-term benefits in that regular nature experiences can provide an underpinning 'buffer', enabling people to maintain their health through stressful life events [24]. Reduced levels of stress have been found to be associated with the quantity of nearby green spaces [25]. However, another study found that the quality of green spaces had a stronger bearing on health outcomes than quantity [26]. Other studies linked mental wellbeing with social activity, including volunteering, in green spaces [27,28]. Green spaces can enable newcomers and migrants to feel a sense of belonging through activities such as community gardening [29,30].

Empirical research has also demonstrated the links between exposure to natural environments and improvements in mortality and morbidity. Benefits include increased birthweights [31–33]; lower mortality levels in greener neighborhoods [34,35], reduced stress levels, indicated by hormones such as cortisol [36,37], reduced heart disease [38], and lower levels of diabetes [39]. Human health benefits are likely to be higher in ecologically richer environments [40,41].

1.2. The Importance of Tacit Knowledge

While the literature on the health benefits of urban green spaces is extensive (and the references above provide just a small selection of recent literature), there is much less clarity on effective ways to 'feed this knowledge into policy, delivery and investment decisions', as the IWUN project's funding application stated. The urgency of this challenge is underlined by increasing evidence in the UK of the effects of the removal of much public funding for parks and green spaces.

Members of the House of Commons communities and local government select committee recently declared that public parks were 'at a tipping point' due to continued funding cuts [42]. There is still no

statutory duty for public or private bodies to provide and maintain green spaces, and therefore, no duty to allocate or ring-fence funding to green space. As local authorities (especially in England) face the impact of 'austerity localism' [43] and the withdrawal of central government support, investment in municipal parks and green spaces has nosedived. Newcastle-upon-Tyne has cut funding for its parks by 90% and is now transferring them to a charitable trust; Knowsley Council in Merseyside had planned a similar transfer, funded by the sale of up to 10% of its green spaces for development, but backed down in June 2018 in the face of widespread public opposition.

This policy context has spawned a plethora of projects designed to demonstrate the value of urban green spaces and to explore new ways of funding and managing them [44]. IWUN has been informed by this context and seeks to contribute to the evidence base that will inform future spending and policy decisions. However, our explorations of decision-making processes alert us to the absence of 'a quasi-rational policy cycle into which evidence from academics can just slot' [45]. Following scholars of social practice [46,47], we recognize that decisions about the funding and management of urban greenspace sit within a web of interactions between individual actors, organizations and the institutions of society (the state, the market, the family and so on). Within such contexts, multiple logics and values are at play [48,49]. Practices are shaped by durable institutions that exercise a long-term shaping of actors' rationalities and establish the 'rules of the game' [50]. Knowledge is established socially through the formation and spread of epistemic communities [51,52]—networks of people who share a worldview shaped by their professional expertise.

Importantly, the knowledge drawn upon by greenspace practitioners and their understandings of 'what works' may have few connections with the academic evidence base. Practitioners seldom have the privileges or time to access academic research, while policymakers are more often informed by 'grey' literature produced by professional bodies and by the practice-based knowledge of their colleagues and their own experience [53].

Therefore, in considering the question of 'what works', this article draws on the notion of 'tacit knowledge', popularized by Polanyi [54] and developed especially through research on the sociology of organizations. It positions tacit knowledge as process rather than product, focusing attention not only on what is known but on how it comes to be known [5,55]. By highlighting the fuzzy and fluid character of the understandings and beliefs that guide practical action, decision-making is shown to be an interpretive as well as a deductive process. In this process, different providers and users of evidence construct bridges and barriers according to their needs and desires, using 'social skill' [56] to build coalitions around particular propositions or actions.

Rashman et al. [4], building on previous studies [57,58], described tacit knowledge as 'personal, contextual and often embedded in practice' (p687). Importantly, 'its transfer depends upon close social interaction, sharing stories and anecdotes to build understanding of practice and develop interpersonal and inter-organizational trust'. As such, tacit knowledge 'is not something that individuals can fully develop on their own', as Pozzali [5] observes (p232). A significant aspect of tacit knowledge is the difficulty in articulating it coherently: as Turner (p149) [59] puts it, practice is 'a condition of understanding which cannot itself be understood in fully explicit terms'.

Tacit knowledge is often considered in terms of untaught skills: how to ride a bicycle or hammer a nail into a wall, for example [54]. But it is also an ongoing process of knowing [4,60]—it is not simply learning by doing but doing as a form of learning. Brown and Duguid [61] described this as 'learning-in-working'; Schön [62] highlighted how this can become a conscious process of 'reflection-in-action'. Within such processes, 'explicit knowledge'—'facts' or 'evidence'—combine with tacit knowledge to produce what Nonaka [57] described as 'organizational knowledge'—the corpus of understandings that exists within an organizational environment about what constitutes professional practice and how it is undertaken. Patterson et al. (p289) [55] highlighted that the process of gaining such understandings, which they describe as 'implicit learning', can occur 'without the explicit intention to learn, without full awareness of what has been learned, and in many cases without feedback from the environment to guide the learning process'.

Urban greenspace management is characterized by the deployment of tacit knowledge in addition to specialist skills such as landscape design and horticulture. As the brief review above indicates, such knowledge is embedded in context, socially constructed (in that it is generated within situations of social interaction) and informal or unwritten. Examining the development of the Nordic Green Space Award, Lindholst et al. [63] explained how it relied on 'managers' initial thoughts and beliefs on important green space qualities as well as on how these qualities could be identified and assured' (p169). Bendt et al. [64] described how volunteers in community gardens in Berlin developed tacit ecological knowledge by trying out different approaches to planting. In this case, knowledge of 'what works' is generated through a heuristic process in situ and accumulated over extended periods of time.

In an undisrupted environment, tacit knowledge can grow and develop into established routines of practice. It becomes embedded as 'logics of appropriateness' [65]—taken-for-granted ways of understanding the world via an organizational context and routines of how things should be done. Such logics can solidify as social practices [47]—patterns of behavior 'embedded in collective cognitive and symbolic structures, in a "shared knowledge" which enables a socially shared way of ascribing meaning to the world'.

When tacit knowledge is interrupted by changed circumstances or new evidence, a process of sensemaking must occur. Actors must weigh their accumulated tacit knowledge—which they may never have explicitly articulated—against an actual or proposed change. Weick et al. (p.410) [66] described this as 'the experience of being thrown into an ongoing, unknowable, unpredictable streaming of experience in search of answers to the question, "what's the story?"'

Fractures between evidence and action can be expected in such circumstances. Actors find ways to navigate contradictions by drawing on their contextual knowledge [67] and reframing their own roles [68]. 'What works' becomes a process of melding and reassembling abstract knowledge, tacit context-based knowledge, and the expectations of managers or policymakers.

2. Research Methods: Arriving at Interventions

While we were aware of the extensive academic evidence on the wellbeing benefits of urban greenspace, we wanted to explore how this aligned with practitioners' tacit knowledge and experience of local context and how this tacit knowledge and contextual understanding influenced their views of which interventions would work in practice, and how.

In order to understand the relationships between existing academic knowledge and actual practice and to develop recommendations for new or improved practice, we drew on Eisenhardt's approach to case study research [69] to develop an iterative process of literature review, intervention selection, reflection and discussion (see Figure 2). In considering the range of potentially appropriate interventions, we bore in mind—and were frequently reminded of by practitioners—the diversity contained within a single city—diversity of habitat, from the moorland of the Peak District National Park to wooded valleys and floodplains, and diversity of population in terms of culture and socioeconomic status.

Our starting point was a review of the academic literature to identify interventions that were recommended on the basis of research or had been found effective in previous studies. We then held a stakeholder event attended by 30 people who, either professionally or as volunteers, were involved in the design, upkeep and use of local green spaces. At this stage, the long list consisted of 29 interventions. The stakeholder event, which was intended to whittle down the number of interventions considered, ended up generating six more. These were the 'loo and a brew' (toilets and cafés in parks), improved lighting and safety features to make parks more accessible, and four cross-cutting interventions on community development, traffic flow, air quality and educational curricula. These were included because they were either specifically suggested by attendees or because they emerged as common themes from the notes of six roundtable discussions facilitated by members of the research team at the event.

We then emailed the expanded list of interventions to members of eight different stakeholder groups, asking them to identify their top five preferences. The groups were selected because of their

local or professional knowledge across open space design, healthcare, and community development. The aim was to generate a broad initial understanding of practitioners' views of 'what works'. A total of 92 people responded to this exercise. The groups surveyed were the following:

- Public health experts working for Sheffield City Council
- Volunteer members of Sheffield Green Spaces Forum
- Staff from the city council's Parks and Countryside Department
- Staff from the city council's Planning Department
- Experts from the Sheffield-based National Centre for Sports and Exercise Medicine
- Attendees of a 'natural health' event organized by Sheffield and Rotherham Wildlife Trust
- Community workers involved in Sheffield's People Keeping Well partnerships
- Members of the Royal Town Planning Institute's regional branch

The fourth stage was to discuss why the preferred interventions had been chosen, how they would work in practice, and what factors would influence decisions on whether or not to fund such interventions. To do this, we arranged six focus group discussions involving a total of 28 participants. Participants were selected for their knowledge of green spaces, health and wellbeing and relevant decision-making processes. They were the following:

- Public health experts working for Sheffield City Council
- Volunteer members of Sheffield Green Spaces Forum
- Community workers involved in Sheffield's People Keeping Well partnerships
- Staff from the city council's Parks and Countryside Department
- Staff from the city council's Planning Department
- A group of national clinical experts, facilitated by the Centre for Sustainable Healthcare

The aim of these discussions was to generate information not only on what was perceived to work, but how and why participants thought their preferred interventions would work. The focus group discussions were supplemented by six one-to-one semi-structured interviews arranged in order to address gaps in the perspectives offered through the group discussions. These were held with two primary care medical practitioners, two therapists, an academic specializing in physical exercise, and a housing developer (Figure 2).

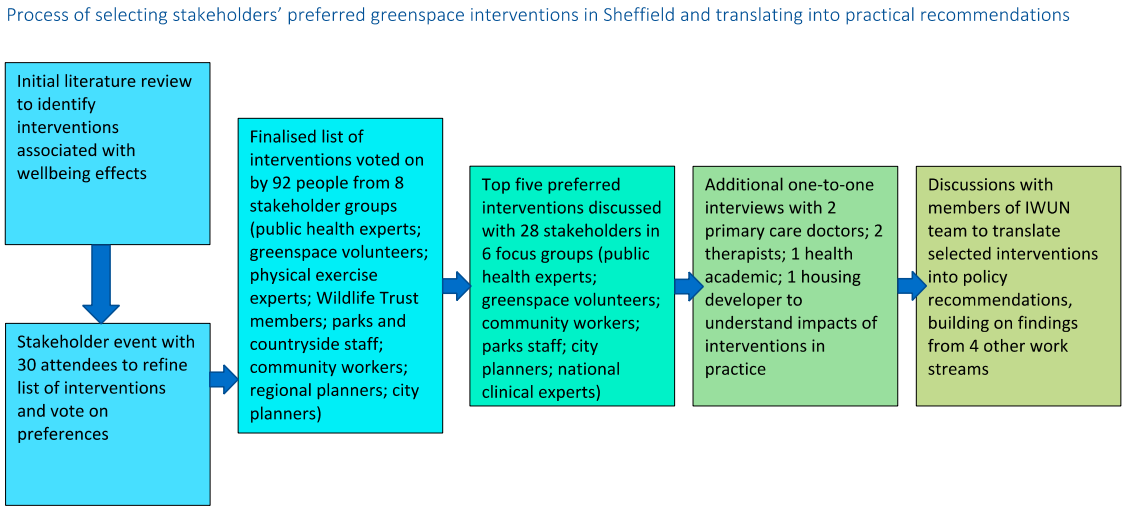

Figure 2. The process of selecting preferred greenspace interventions.

The long list of interventions (Table 1) was divided into four main categories: capital investment (or place-making), maintenance and policy (or place-keeping) [70], social and healthcare interventions (or place-prescribing), and finally, cross-cutting interventions to facilitate specific initiatives in green spaces. The focus groups and interviews all addressed three themes: how the proposed interventions would contribute to wellbeing; what decision-making processes would facilitate or prevent interventions being implemented; and the reasons why the proposed interventions might be approved or rejected.

Table 1. The long list of interventions derived from existing research and interviews with Sheffield stakeholders.

Capital Investment in Green Spaces (Place-Making)
Create a variety of 'green corridor' walking and cycling routes to and from major green and blue spaces away from busy roads.
Improve physical access to green and blue spaces for all residents: disability adaptations, public transport, and cycle or walking routes to and from green/blue spaces within easy reach of homes.
Re-use vacant land as temporary or permanent green spaces (including pop-up parks, temporary wildflower meadows, and community growing projects).
Increase the amount and variety of city centre green space to meet the needs of different users.
Increase the number, diversity and locations of urban trees.
Provide 'natural meeting places' outdoors in each neighbourhood: sheltered open locations with a variety of natural features.
Create new large urban parks and woodlands.
Create a network of micro or pocket parks.
Install simple buildings to serve as bases within parks—'shipping container' model.
Harness employer contributions/involvement to support provision of city centre green spaces.
Provide toilets and cafés ('a loo and a brew').
Maintenance, support and policy for green spaces (place-keeping)
Increase the variety of planting in green spaces to attract more species and provide greater interest, including colorful, flowering vegetation.
Set minimum standards for regular sustained maintenance of green spaces, covering safety, cleanliness, variety of planting and accessibility.
Facilitate enjoyment of woodlands and forests through the provision and maintenance of paths, toilets, and shelters.
Create planning guidance on the provision of gardens in new developments and on maximizing views of green space from new buildings.
Ensure that all open green and blue spaces have a mix of benches and other seating, designed to maximize enjoyment of natural views.
Provide wayfinding, signposting and information to encourage longer stays.
Improve lighting and safety features to make natural spaces more accessible.
Introduce electric bike hire/loan to make green spaces more accessible.

Table 1. *Cont.*

Social and healthcare interventions (place-prescribing)
Provide development workers (for example park rangers) to encourage and facilitate outdoor activities among a range of groups; and increase the visible presence of park workers to promote a sense of safety.
Offer 'green prescriptions' of activities in natural environments to supplement medication or talking therapies.
Support voluntary and community organizations in providing volunteering opportunities in natural environments.
Run nature-based activities in public green spaces for people with or recovering from mental health problems.
Support voluntary and community organizations in providing activities that encourage people (including family groups) in deprived neighborhoods to enjoy green space.
Provide areas within existing green spaces where children can stay and play or be outside, within walking distance of their homes.
Provide opportunities for outdoor learning in schools, including forest schools and 'exploring nature' classes.
Support fitness and exercise groups in public green spaces and advise on appropriate provision of play/fitness facilities.
Provide 'know your patch' green neighbourhood guides to residents, especially in deprived communities.
Provide organized social or health walks in green spaces to encourage people to spend time outdoors.
Support gardening projects (including shared allotments) in deprived areas and in schools.
Offer green space guides and information about the therapeutic uses of natural environments to all mental health service users.
Cross-cutting interventions to facilitate specific green space initiatives
Provide generic community development workers within a neighbourhood management setting that brings different professional interests together.
Slow down traffic flow – limiting the dominance of motor traffic through traffic light sequencing, crossings and speed limits.
Take action to tackle air quality as means of encouraging the use of green space, walking, and cycling.
Change educational curricula to support outdoor learning.

The final shortlist, which formed the basis of the group discussions and individual interviews, is provided in Table 2.

Table 2. The short list—five key interventions.

Green Space Interventions Considered to Have the Greatest Potential Mental Health Benefits for Sheffield's Residents
Improve access to green spaces, including walking and cycling routes.
Provide new or upgraded toilets and cafés in parks and woodlands ('a loo and a brew').
Set and maintain a minimum standard of regular, sustained maintenance.
Employ parks staff to encourage outdoor activities and volunteering.
Support voluntary and community organizations in animating green spaces.

In a further stage of the research which will be the subject of separate papers, the shortlisted interventions were analyzed according to their economic and social value and ecosystem service provision, using a cost-utility approach [71]. Building on the process of selecting interventions and taking into account the findings from the other strands of the research, the research team then used the findings on the preferred interventions to produce a series of five policy briefings designed for different audiences: national policymakers; municipal planners; greenspace managers; local voluntary and community organizations; and local healthcare practitioners. The process of producing these briefings is pertinent to the discussion of practice-based knowledge and is considered further below.

3. Findings: Making Tacit Knowledge Visible

This section reflects on what the research process outlined above can tell us about the role of practice-based knowledge. What are the characteristics of the knowledge we were looking to capture in our research in order to ensure that our recommendations were grounded in local experience as well as being informed by a thorough review of the research literature? These findings are based on a thematic analysis of recordings and notes from the focus group discussions and interviews, together with correspondence with stakeholders involved in the process and field notes from events. As the iterative process outlined in Figure 2 highlights, our list of interventions was a hybrid of academic research findings and local knowledge. The local knowledge highlighted what the stakeholders we consulted considered to be gaps in the evidence base. In the end, only one of these additional interventions—the 'loo and the brew'—made the final selection. Nevertheless, it was noticeable that the different stakeholder groups favored interventions that were generic rather than specific. Each could be applied in different ways across the city of Sheffield, and each was associated with a range of potential benefits for a wide variety of user groups. More specific suggestions, such as the idea of 'green prescriptions' for people with mental health conditions, commanded strong support from some groups (including voluntary and community organizations) but not from others (including parks staff and public health professionals).

At the end of the process of selecting and discussing interventions, the research team embarked on a further stage of translating the interventions into policy recommendations. For example, 'a loo and a brew' might be a recommended intervention for a specific site, but the policy implications related to social inclusion (ensuring parks and green spaces cater for everyone), spatial planning (making sure there are enough toilets and cafés in the right places) and promoting nature connectedness (by making it easier for particular groups to use and enjoy green spaces). There are potential implications for the work of urban planners, greenspace managers, health professionals and community-based organizations. As a research team, we sought to capture these in a series of short policy briefings [72] and they were finalized through another process of internal discussion, presentation at additional stakeholder events, and comments from practitioners.

Reflecting on this process, five characteristics of tacit or practice-based knowledge are highlighted here. They are illustrated using comments and quotations from participants that show some of the complexities and nuances of practitioners' use of knowledge in practice. These highlight how knowledge is constructed and used discursively by practitioners, as previous studies have also revealed [73,74]. Pseudonyms are used to avoid identifying individuals.

First, there was evidence from our engagement with stakeholders that tacit knowledge has a significant influence on practice but, since it is mostly unrecorded, it is difficult to capture. The addition of the 'loo and a brew' to our list of interventions is a case in point: attendees at our initial stakeholder event, and parks staff in particular, argued that it should be listed. As an intervention, it was absent from the academic literature we consulted. Yet, it formed part of the repository of common knowledge among practitioners in Sheffield. As 'Inge', who attended a focus group with public health practitioners, commented, 'people often say a loo, a brew and something to do—it's not just a loo and a brew, it's a reason to be in the green space, whether it's wreath-making at Christmas or an Easter egg hunt or a duck race, it's something to get people engaged'. For her, 'a loo, a brew and something to do' was a well-known shorthand for effective park management. While it may not be overtly examined in empirical research or acknowledged in policy literature, it is seen as common sense—a taken-for-granted approach based on everyday experience. 'Nils', a community worker, explained how access to a toilet determined where elderly or disabled people were able to go:

> In my experience, volunteers working with people who are not confident going out, there's almost like a checklist—is the place accessible, are there plenty of seats and is there access to toilets, before they even consider going out.

Second, tacit knowledge is leaky. This is connected with its unwritten and commonsense characteristics. Practitioners consider their knowledge to be based on evidence, but do not always know where the evidence is to be found; and as people move between roles or retire, the original source of the learning is distanced from actual practice. In an email correspondence with 'Jack', a parks manager, he commented:

> You need to hunt down Jacki B and download her brain and all the work she did for the [defunct] Countryside Commission [which] shaped many a countryside manager ...

'Iris', a public health official, emailed to follow up comments she made at a focus group discussion to advise us to track down previous research carried out in Sheffield on greenspace interventions which still informed practitioners' thinking. In this case, there was written evidence of the work done, but no current knowledge of where it could be found:

> Much work has already been done to develop green space interventions over the years esp. during the regen[eration] heydays of the 'noughties' where lots of time and money was spent ... most of Sheffield's poorest neighborhoods have had plans developed for greenspaces with local engagement to do so. These plans should be 'lodged' somewhere in the Council either with planning or parks or both. They will have been funded by SRB [Single Regeneration Budget], Neighbourhood Renewal Funds etc., Burngreave New Deal etc ... .

Wherever this work exists in physical or digital form, access is often based on knowing a person who knows where the files were last seen. Systematic archiving and indexing of data is absent and knowledge leaks as departments are reorganized, staff move from one location to another, and people retire or are made redundant due to funding cuts. Tacit knowledge may be cyclical, involving repeated processes of loss and rediscovery. Loss is associated with staff leaving and practice being reorganized, as 'Abdul', a parks worker, commented—'austerity comes in, cuts came in obviously, all that [work] had to be rolled back to keep the core service going ... '

Third, tacit knowledge is local and context-specific, as well as relying on commonsense principles. It requires a knowledge of specific landscapes, the people who may use them and the problems that may arise. 'Claire', a neighbourhood worker, explained at the initial stakeholder event:

> Antisocial behavior and bikes were a problem in Manor Fields [a green space in a deprived neighbourhood]. There was also a time when I would not use Norfolk Park [a nearby large park] because there was no café. Manor Fields is now filled with diverse users. There are people playing frisbee, having picnics, sitting on benches [...] One day an Afghan family had lit a fire and it was attracting attention so we went and asked them if they were OK and they told us they were celebrating Eid. Eighteen years ago that would not have happened. It took a lot of time and effort.

This highlights that identifying the 'best' intervention or 'what works' in promoting wellbeing depends on close knowledge of local circumstances. It is only by knowing the history and culture of Manor Fields that a neighbourhood worker is able to identify a fire as signifying that a family feels secure enough in the locality to celebrate a festival, rather than being a sign of problematic behavior.

A fourth dimension of tacit knowledge is that it is conservative. It can be resistant to innovation and suspicious of new information, relying instead on tried and trusted rules of thumb. Jack commented in his email that there was 'nowt new', adding:

> Professionally speaking: 25 years of experience shows that 70% physical intervention matched with a 30% social intervention is absolute minimum best practice.

New initiatives were often seen as wasteful because they did not draw on local knowledge and expertise. Despite this focus on physical intervention, Jack warned us to

> be aware [of] the rafts of unused MUGAs [multi-use games areas], bowling greens, tennis courts, parks and physical interventions that can have no benefit to positive health and wellbeing due to non use, irrespective of a positive design that works elsewhere.

The conservatism of tacit knowledge is reinforced by its fifth characteristic, which is that it is disconnected from decision making. The stakeholders we consulted expressed frustration that their expertise and experience were being overlooked or downgraded in decision-making processes. In a focus group discussion with parks managers, Abdul told us,

> I've just come back into the council . . . [I've] been away for a few years but obviously a lot of people have gone, a lot of resource has gone. There are conversations that happen across services and it'll always get to a point where this is a really good idea, really good idea [. . .] Oh who's going to make this decision, where's the money for it? And the priority won't be green corridors.

In the same discussion, one of his colleagues, 'Yve', asked whether any arguments would be particularly convincing in persuading decision-makers, said 'I don't even try anymore'.

'Mandy', a community worker, commented in another focus group discussion on the marginalization of practitioners' knowledge about what would prevent mental ill-health:

> It's well known that prevention is better and more effective in the long term. But at the moment in the current climate, everybody's fighting fires and not actually able to put that funding into the preventative services. It might be more expensive in the short term, but in the long term it really does help to invest in the community and voluntary sectors. We're picking up a lot of the bulk of what statutory services used to and in my opinion still should be doing. And it's getting harder and harder and harder to deliver a decent service because the demand is so high.

In selecting our interventions, we sought to make this tacit knowledge visible and valuable by paying attention to it in our research findings. Highlighting the context-specific experience-based knowledge of practitioners positions the findings of a relatively short-term research project within a field where effects and outcomes are influenced not only by academic evidence but also by the dynamic interplay of policy, decision-making processes and practitioners' situated knowledge and processes of knowing.

4. Discussion: Assembling the 'Known'

This section reflects on the processes of translation that stabilize or destabilize what is 'known' and where it is known. In doing so, it draws on the insights of assemblage theory [75], which has been used by other scholars to describe and explain the processes of knowledge construction and transfer. Examples include analysis of the 'hybrid epistemologies' arising from research conducted with different groups and using multiple methods [76], investigation of how 'climate knowledge' is stabilized or destabilized [77], and research into how the personal experiences of practitioners give rise to assemblages of knowledge that 'can consist of many different, seemingly contradictory factors' [78]. This discussion contributes to this body of work by foregrounding the role of researchers themselves in translating practitioners' tacit knowledge into the policy environment.

The outcomes of assembling what is 'known' in the IWUN project are illustrated by an incident at the final conference for the IWUN project held in London on 1 May 2019. At this event, Hardip Begol, a senior civil servant at the UK's Ministry of Housing, Communities and Local Government, tweeted [79]:

> Great to be at #greencitywellbeing @IWUNproject. Mercifully short and practical guides for different audiences on improving wellbeing through urban nature. #WorldParksWeek

The 'mercifully short and practical guides' were the five policy briefings mentioned above. Such an accolade from a senior civil servant serves to validate and legitimize the project's findings among an important audience of policymakers. But it also raises questions about how knowledge is constructed, interpreted and assembled in order to inform policy. In the following paragraphs, we reflect on how tacit knowledge becomes enlisted as part of an assemblage of knowledge, extruded in the form of policy advice, and released into the wild.

The idea of an assemblage, as formulated by Manuel DeLanda [75] (2007), is that society is constituted through networks of relationships—between people, between organizations, and between cities and nations. DeLanda argues (p11–12) that despite the tight integration between the components of an assemblage, 'the relations between them are not logically necessary but only contingently obligatory: a historical result of their close coevolution'. McFarlane [80] (2011a) argues that the defining characteristic of an assemblage is flux. Learning is produced 'through *doing*, *performance and events*' [81]. Assemblages are characterized by processes of territorialization—or stabilization—and deterritorialization, or destabilization. They persist, but are not fixed.

The knowledge derived from an academic research program may be considered as an assemblage. It consists of peer-reviewed articles in respected journals, the gold standard of academic evidence. It includes other outputs such as the briefings mentioned by Hardip Begol. It includes notes of meetings, presentations, proposals for future research projects, websites and other digital material, and archived data. But it also consists of processes, as well as products. The stakeholder conversations, email exchanges and internal debates about what should or should not be included in a policy briefing are just as much part of the knowledge assemblage created by the IWUN project as the recognized outputs such as journal articles and briefings.

In this assemblage, the tacit knowledge of practitioners is territorialized: it is enlisted in the process of academic inquiry and translated from the unwritten shared understandings of practitioners into relatively solid, material, artefacts such as articles and briefings. By recording participants' views through a format—the semi-structured interview or the focus group—that has been legitimized through repeated prior academic usage, their taken-for-granted understandings of the world are (re-)enrolled in the process of evidence production.

This territorialization counters the leaky and dispersed character of tacit knowledge described in the previous section. It makes viscous what is liquid, solidifying it into artefacts—but simultaneously selecting and interpreting what is being made solid. Not all tacit knowledge is captured: what is assembled is the tacit knowledge revealed in response to researchers' questions. It is not logically necessary that the knowledge made visible through this particular piece of research forms part of the evidence base, but it is contingently obligatory in the sense that only the data produced in response to the researchers' enquiries may be included.

Thus, tacit knowledge is translated from shared understandings between networks of people in a local context—parks managers or healthcare providers—into a separate but related process of generating academic knowledge. This assemblage has its own lifecycle. The shared understandings of a research team may be comprehensive but relatively short-lived. The team itself may disperse into other roles and organizations and the assembled knowledge is qualified, overtaken or contradicted by further research findings. The artefacts of policy briefings may be used for a few years; the evidence captured in a journal article might have a lifespan of a decade or more, depending on its visibility, rigor, relevance and capacity to spawn or inform further research.

In a UK context in which academic research is increasingly valued in terms of its 'impact', or benefit to society as well as academia [82], we should also consider how the assemblage of academic evidence affects the practices it seeks to influence. DeLanda [75] described networks of people as the effects of the use of language (p48):

> ... the habitual grouping of ideas through relations of contiguity (in space or time), their habitual comparison through relations of resemblance, and the habitual pairing of causes and effects by their perceived constant conjunction, turns a loose collection of individual ideas into a whole with emergent properties.

In the course of a time-limited research project such as IWUN, it is not possible to demonstrate how the evidence we have generated has contributed to the development of practice. However, if we return to the idea of the 'loo and a brew' initiated by attendees at our first stakeholder meeting (while not featuring in academic research from the outset), we can begin to map the possible transfers from practitioners' tacit knowledge into the assemblage of academic knowledge and then back into practice.

The policy briefings referred to at the beginning of this section comprise five documents designed for different audiences: national decision-makers, spatial planners, healthcare professionals, greenspace managers and voluntary and community workers. Three of those briefings [83] contained a paragraph stating that

> Simple interventions (such as a café in a park or a pedestrian-friendly access route) can make green spaces welcoming and inclusive. More people are likely to enjoy natural spaces if there are places to stop and sit, facilities such as toilets, staff who can create a sense of safety and social activities that connect with vulnerable or isolated people.

The briefings for national policymakers and healthcare professionals did not contain this statement on the grounds that readers of these briefings would be less likely to have a direct involvement in greenspace design. Therefore, the translation of evidence into practice is influenced in the first instance by researchers' judgements about relevance and potential readership.

The 'loo and a brew' also featured in an article in a practitioner journal, *Town & Country Planning* [84]. This is read by members of the Town and Country Planning Association, including planners, planning consultants and urban designers, but also academics involved in spatial planning, policymakers and civil servants, and local activists who may be retired members of the planning profession.

In the local context of our research in Sheffield, the provision of a café and toilets was included in a consultation with residents over improvements to a park in the Netherthorpe area to the northwest of the city centre. This consultation took place in late 2018 after our list of interventions had been drawn up and discussed with planners and parks staff.

These actions signal—but do not guarantee—the re-translation of the 'loo and a brew' from local tacit knowledge into academic evidence and then back again into practice, reinforcing existing tacit knowledge but also potentially spreading it to new audiences as the material produced by the research team is read outside Sheffield (Figure 3). Charting the journey of the dissemination materials over time and their influence on practitioners would be a research project in itself. We suggest, however, that the production of artefacts from academic research for non-academic audiences has the potential to kick-start new processes of territorialization in which existing tacit knowledge is re-validated and established among new networks of practitioners.

Figure 3. How tacit knowledge may be recycled and legitimized through academic research.

5. Conclusions

In conclusion, we argue that the longstanding concern with 'what works' in policy and practice [85] presents both danger and opportunity. The danger lies in the reduction of academic and practice evidence to a series of bland prescriptions of 'best' practice or a brief list of policy recommendations without the detail provided by underpinning evidence or context. The opportunity is to use a concern with 'what works' as a gateway into the rich landscapes of both academic and tacit knowledge.

In order to fully appreciate what these landscapes have to offer, it is necessary to consider evidence (and the production of evidence) as socially constituted, interpretively fashioned and politically weighted. In this article, the presentation of findings shows one element of this social construction of knowledge: the inclusion or exclusion of knowledge according to who knows it (academics, decision-makers, practitioners or service users) and how it is known (through unwritten experience, policy briefings or journal articles). Similarly, the interpretation of knowledge is revealed in the way that an intervention such as 'a loo and a brew' can be a convenient shorthand for addressing a range of greenspace issues, including social inclusion, accessibility, conviviality and security: the intervention is not simply an instrumental path to wellbeing in itself, but a way of condensing a wealth of experience, research and 'good practice' guidance. Indeed, some of our research participants used the mantra 'a loo, a brew, a view and something to do' as a memorable guide encompassing most aspects of good public park management.

More worryingly, we found knowledge—especially the experiential knowledge of greenspace practitioners—being excluded by policymakers because what was 'known' did not have an assigned economic value. As one participant noted, healthcare funders would only provide resources for a service on the basis that it would reduce costs for the funding organization. For a finance manager balancing a healthcare organization's budget, the knowledge that matters is not the wellbeing effects of a greenspace intervention, but the cost attached to it and the potential costs saved by undertaking it.

In a context shaped and dominated by the effects of austerity, we also see that knowledge is politically weighted. Knowledge that supports a 'more for less' agenda [86] of public service provision is privileged and research is presented as offering 'a compelling financial case for public investment—compelling in the sense that policymakers can be persuaded that further cash savings may be achieved' [87]. The political imperative of 'austerity localism' [39] determines whether knowledge is considered worth knowing.

The social and political construction and interpretation of knowledge presents a continuing conundrum. Our research underlines that all knowledge is situated [81,88] but emphasizes the value of a continuing interchange between academic research, policy formulation and the tacit knowledge embedded in practice. Moreover, it emphasizes the need to better curate and document the forms of knowledge that do exist—rather than being urged to 'hunt down Jacki and download her brain', researchers and practitioners alike would benefit from access to local repositories of practice-based knowledge. To achieve this, the organizations that employ practitioners need to value and record what they have gleaned from their experience.

In addition, our research underlines that knowledge is spatially as well as socially situated. Claire's understanding of an Eid fire at Manor Fields as a positive sign rather than as evidence of antisocial behavior derives from her knowledge of that particular space and the communities who use it. Thus, while there are benefits for policymakers in translating research evidence into 'mercifully short' policy and practice briefings, we should constantly assert the importance of the local context and resist the reduction of knowledge, tacit or academic, to simple policy prescriptions. Instead, those prescriptions should be viewed as contributions to assemblages of knowledge that are simultaneously stable and fluid, amenable to development while drawing deeply on what has been known through decades of context-informed practice.

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